Exhibit AE

SUPERIOR COURT OF NEW JERSEY
LAW DIVISION - MIDDLESEX COUNTY
DOCKET NO. MID-L-003809-18AS

KAYME A. CLARK and DUSTIN W. CLARK,	)	104 HEARING
Plaintiffs,	)	TRANSCRIPT OF PROCEEDINGS
v.	)	(VOLUME II)
JOHNSON & JOHNSON, et al., et al.,	)	
Defendants.	)	

Place: Middlesex County Courthouse
56 Paterson Street
New Brunswick, New Jersey 08903

Date: May 30, 2024
9:01 a.m.

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EXHIBITS

THE COURT: Good morning, everyone. My name is Judge Ana Viscomi. We are here with regard to the continued 104 hearing of Dr. William Longo in the matter of Kayme Clark and Dustin Clark versus Johnson & Johnson, Docket Number 3809-18.

May I have appearances, please, on behalf of plaintiff.

MR. BRALY: Your Honor, on behalf of the Clark family I'm here, Benjamin Braly.

THE COURT: Thank you.

Further on behalf of the plaintiff?

MR. BRALY: Mr. Bibro is here from the Early firm.

THE COURT: I'm sorry. Could you state your name again, please.

MR. BIBRO: Mark Bibro from the Early firm.

THE COURT: Thank you.

And for the defendants.

MR. GARDE: If Your Honor please, John Garde on behalf of the Johnson & Johnson defendants. With me is Mr. Morton Dubin and Mr. Kevin Hynes of King & Spalding.

MR. DUBIN: Good morning.

THE COURT: So, we left off yesterday

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afternoon, although we're not doing this in the normal order what I guess should be the continued direct of Dr. Longo.

MR. BRALY: Your Honor, that's correct, and I'm going to finish the chrysotile part of this. We had a short e-mail exchange yesterday evening, based on what you had indicated to us in chambers. I'm going to go ahead and lead off with the amphibole motion and just cover the methodology part of that and kind of reverse what we had done for the chrysotile thing.

THE COURT: That's much appreciated.

MR. BRALY: Great. And thanks to Mr. Garde for the suggestion. I think it'll work.

THE COURT: Thank you.

MR. BRALY: Your Honor, may I have just one moment?

THE COURT: Take your time.

MR. BRALY: Your Honor, are we prepared to continue?

THE COURT: Yes, please, whenever you're ready.

MR. BRALY: Fair enough.

CONTINUED DIRECT EXAMINATION BY MR. BRALY:

Q. Dr. Longo, when we left off yesterday

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I was asking you about the role of birefringence with respect to the calculations of chrysotile that you had found in talc by PLM.

Do you recall us talking about that?

A. I do recall that.

Q. All right. Exhibit 28 is taken from your chart, project M 71547 and 546, calculating the birefringence in a known sample of chrysotile, California Calidria chrysotile, correct?

A. Correct.

Q. Are the findings that you found with respect to chrysotile in Johnson & Johnson's consistent with the birefringence calculation associated with a known sample of chrysotile asbestos?

A. It is.

Q. Next, this is Exhibit 20, this is a page out of a textbook known as Deer, Howie and Zussman.

You're familiar with that publication, correct?

A. I am.

Q. It is one of the publications you rely on, correct?

A. Yes.

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Q. This is a page out of Deer, Howie and Zussman calculating the birefringence associated with talc; fair; fibrous talc?

A. Yeah. They show it, a talc, one-talc crystal. But it is for the -- if you have talc plates on edge, meaning they're all stacked up or a fibrous talc and what the refractive indices are and that last one, sigma, is the calculation for the birefringence.

Q. And the birefringence for talc is on the order of five times higher than it is for asbestos, correct?

A. Yeah, anywhere from four to five times higher. It's very unique as compared to chrysotile. So, chrysotile, again, would have very low birefringence and the talc gives you that high birefringence as we looked at yesterday, even when you have a chrysotile and a talc intergrowth under the same conditions of how much, you know, how much power we're giving to the brightness.

Q. Right.

A. It still shows a significant difference that you can visually see.

Q. One of the criticisms that was laid out in the motion filed against you was that you had

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calculated birefringence incorrectly and we had some of that discussion yesterday.

Do you recall that?

A. I do.

Q. And the suggestion was made that you have to take the absolute highest value in gamma and subtract the absolute lowest value in alpha in order to calculate birefringence.

Do you recall that suggestion?

A. I do.

Q. Do they do that here in Deer, Howie and Zussman?

A. No, you would have a much higher birefringence for the talc.

Q. In fact, the value that they calculated for birefringence is .05, correct?

A. Correct.

Q. And that is exactly the difference between the highest value in gamma of 1600 and the highest value in alpha of 1550 correct?

A. Correct.

Q. It's also exactly the difference, make sure I got that right -- yes -- it is exactly the lowest value in gamma subtracting the lowest value in alpha; 1.589 subtracting 1.539 is 0.05?

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A. Correct. If you used it the other way, you would have a birefringence that's different than what Deer, Howie and Zussman has put for the talc. In fact, every mineral in the Deer, Howie and Zussman book where it's biaxial where they showed a birefringence, all the calculations are done, highest gamma, highest alpha, lowest gamma, lowest alpha, gives you exactly what they print out.

So, this by far is not something that is the Longo process to get lower birefringence so I can call it chrysotile. I'm doing what has been published. This is the third edition of Deer, Howie and Zussman; the second edition, the first edition, it's all the same way and, of course, we have EPA doing it the way that we do it.

Q. Again, this one, we looked at the calculation previously. This one is just reflecting that the EPA recognizes the birefringence for fibrous talc of .6, correct?

A. .06 is probably on the higher end. I've seen it as low as .045. But it's still anywhere from four to five times higher than what you find for chrysotile.

Q. So, if we just break this down into a chart, the published EPA R-93 600, birefringence

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ranges for chrysotile and talc are shown there at the top, correct?

A. That's -- from their calculations. If you go and calculate the way that we do the calculation, all of them will fit in that range of 0.004 to 0.017, and as we discussed yesterday, if we use this other method, the highest gamma to the lowest alpha will put you in a range that does not correlate to chrysotile at all.

Q. Okay. I apologize. There may be some slight repetition here but the methodology that you applied to Johnson & Johnson is the same methodology that you applied for analyzing talc products for the presence of chrysotile by PLM?

A. Correct.

Q. Have you --

A. All the different manufacturers and we see the same thing.

Q. Which was the next question. Has this methodology produced reproducible and verifiable results?

A. Yes, we see it over and over and over, any time we do the calculations, it comes into the range. Even sometimes if you were to use the other method, because they're so close together,

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that they still will come into the range. That's on occasion.

Q. Are there other scientists who have found chrysotile in Johnson & Johnson's Baby Powder?

A. Yes. The AMA on behalf of FDA found chrysotile in a -- they call it a split sample from one container, so three samples were sent to AMA, three splits out of the same container, and two of them had chrysotile.

Q. And what's shown is the report from AMA on behalf of the Government that found trace levels of chrysotile in Johnson's Baby Powder?

A. Yes, sir. The percent chrysotile by TEM.

Q. That's right.

A. Now, I don't agree with those percent numbers and that's why -- because they're not calculated right even though they're following the protocol. These are one of the things that the FDA -- now, the White Paper from the -- all the interagency scientists are not going to have percentages of chrysotile by TEM. It's all going to be fiber bundles per gram because of the problem associated with taking a calculation. You're not weighing anything.

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You take a calculation, basically it's just determining the volume of the cylinder and then turn it into a density, et cetera. But this is -- these really high detection limits is based on finding one fiber and it's a fiber you make up. You can just use any, design any you want. Well, that means that your detection limit in this sample is one fiber and there's no methodology anywhere that can get you down to one fiber. Ours is the lowest that I've seen out there using the density -- the concentration method, you know, our -- ours is in the 4,000 to 6,000 range.

But in order to have appropriate weight, you can't base it on one fiber. There's more than one fiber in that sample. In this particular instance, this detection limit is about five million, so you would have to multiply that by five million to get something even close to what's really in there and I think that's why the White Paper is doing -- would do away with this.

Q. Right.

For purposes of what we're talking about today, I don't really want to get to the methodology of AMA --

A. Okay.

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Q. -- how that might be different.
The point of showing you this and what I'm just asking you, is you're not the only person who's found chrysotile in Johnson & Johnson's Baby Powder, correct?
A. Not by far. There's been a number of people including the Colorado School of Mines. They made a -- when they finished their heavy liquid density separation method, they were finding chrysotile, I think it was in the Argonaut Mine and that's why they were developing a two-stage method, one for the amphiboles on the concentration method, and one for chrysotile, which they're finding chrysotile.
Q. You're aware that in the documents Johnson & Johnson has produced in litigation, that there have been multiple findings in reports of chrysotile in baby powder?
A. I am aware of that.
Q. I want to show you something that was developed in discovery with Johnson & Johnson. This is Exhibit 31. This is referred to as the Decades of Evidence Chart. I hope you can see this clear on your monitor and on this overhead.
A. Well, if I lean into it, I can.

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Q. I have a physical copy of it. Would you prefer that?
A. No, this is fine. I can see it.
Q. All right. I have highlighted every section where there was a finding of chrysotile in a sample that would correlate with Vermont or Chinese talc sources. And as you go through it, you can see samples after samples after samples reporting findings of chrysotile in Johnson & Johnson's Baby Powder products.
Is this consistent with what you find in your laboratory?
A. We are finding chrysotile in -- from the various mine sources, as well as from the products themselves. So, it is not me only finding chrysotile and this is information that has been well-known by Johnson & Johnson for some time, in my opinion.
Q. Okay. Just tabulating up that list, it was not 35 individual samples, it was 35 reports that included multiple samples of chrysotile being found in Vermont and Chinese-sourced Johnson & Johnson products. Is that consistent with what you find in the lab?
A. Yes, it is.

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Q. You were asked about this and we kind of talked about this, this is toward the last part of this section that I need to cover with you, but does the PLM analysis require a secondary step of confirming by TEM?
A. No, it doesn't.
Q. Do you care to elaborate on that?
A. All the -- most all the methodologies state that once you -- once you identify it by polarized light microscopy, that's where you stop. There's no method out there that says once you find it by PLM, now you've got to go into TEM and verify it. That's just -- it's not in EPA, it's not in ISO, it's not in ASTM, and the White Paper group also states once you find it by PLM, you stop.
Q. Exhibit 6 is the appendices to the White Paper. Let's stop and talk about the White Paper for a second.
The Interagency Working Group on the detection of asbestos in cosmetics, can you tell us what that group was, to your understanding?
A. Yes. The FDA had what they called the Interagency Working Group, which were the scientists from NIOSH, EPA. I think there are a number of them who were asked to put a protocol

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together, methodology for the detection of asbestos in cosmetic talc. This was a method that EPA wanted to have done. So, they had all these scientists from around all the different agencies, from NIOSH to OSHA to the Environmental Protection Agency. Some scientists were just deeming -- were outside the agency but experts in their area, and they put together what they said was their recommendations of what should be in the method.
Q. Okay. Did this involve more than 30 subject matter experts who worked for the better part of a year to put together this document?
A. It was a year and then FDA invited in outside groups or anybody who wanted to come in and either say it's a good idea or it's a bad idea. And I presented a -- I presented a paper there. I wasn't asked to give a paper; just if you wanted one, you had to check a box and give them an abstract and see if they would take it or not. And what I was showing them is how the heavy liquid density separation, specifically in amphiboles, and talking that we're looking now at chrysotile, should be used because of the detection limits.
Q. In fact, you testified to Congress about specifically that issue?

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A. That I was invited to, yes.
Q. Yes.
A. It was nerve-racking, and I don't have a problem speaking in front of people.
Q. The Interagency Working Group, did they have a flowchart that discusses the propriety of having to confirm by TEM a positive finding by PLM?
A. No. It's just optional. They say you can do an optional SEM analysis. Do you need to do TEM? No, it's not saying you have to do TEM at all. It's not stepping you from it, but --
Q. Right.
A. But it's not a methodology that's required if it's positive by PLM analysis.
Q. And they continue in the text of it and the pertinent part of this is simply the underlined part, if amphiboles or chrysotile are present in the sample using PLM, the analyst should be able to conclude that the sample contains these particles, yes, and to record the observation, no further analysis may be required.
Do you see that?
A. Correct.
Q. Do you follow a proper methodology in

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your evaluation of chrysotile in talcum powder?
A. We follow exactly the methodology that -- the methodology for determining any type of mineral by polarized light microscopy, specifically asbestos.
Now, we have a debate and a little disagreement on the refractive indices and where they lay, but we follow the method.
Q. Are the methods that you're following, are they published and well-understood methods?
A. Yes, sir. The ISO method, the 22262-1, the EPA R-93-600 method all is done in the same way.
Q. So, the information that you're using to perform your analysis, is it based on material and information that are relied on by scientists like yourself?
A. Yes.
Q. Are the results reproducible?
A. They are reproducible. We actually put together for the analyst what we call standards where we took the SG-210, in one case the SG-144, and made various concentrations in talc, starting off at .01, .05, .001, .005 and on down. And then

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the analyst would go in and count all the structures they saw. Where we get down to 0.0001 is where we found nothing, and 0. -- four zeros and one, three zeros and one we found one to two to three structures.
So, when our analysts look at a sample and make a determination what the weight percent is, they're not looking at it as the one fiber in this big field of view. They're looking at what the concentration was that we found. So, if we find this many structures and, you know, .005 plus or minus a few, that's how we get the weight percent.
Typically, an analyst will look at a visual estimate and they'll look at it and try to determine what percentage of space does that take up in the field view. If it's 1 percent, if it's a half percent, whatever. Because are these so small and we see so little in the field of view, we had to do it that way to validate it. And that validation of analyzing it on the amphibole side doing the same thing was how -- one of the things we had to submit to the American Society -- A2LA, the American Association of Laboratories, that will certify certain protocols using ISO methods because for

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asbestos and other things, there's no set protocol. You're going to do something that's different and they will certify that you're doing the QC, you've looked at the -- you validated, et cetera, et cetera, et cetera, and they come in every year and relook at what you've done to validate you.
So, that's why we have that certification for the analysis of amphiboles asbestos by both the Blount method and TEM method and PLM. Blount method is a sample prep and analysis by PLM. And then the ISO 2226-2 Section 16 method is, again, a method for preparing the amphibole sample for either TEM, SEM, PLM or XRD. So, we follow those and they verify that we are.
Q. The last question I wanted to ask you about in the PLM chrysotile section of this has to do with the criticism levied about the brightness of the PLM stage.
Can you digitally manipulate images to artificially change the brightness to essentially make it whatever you want to make it?
A. Sure. Do you use a PowerPoint? You can increase the brightness, you can decrease the brightness, but it doesn't reflect actually what the data is. And if you look at what we did on some of

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these where we have what's called the intergrowth where you have a talc section and a chrysotile section. Now, that's done under the exact same conditions they're criticizing but I don't know a way of just making one part of it brighter than everything else. If that software exists, I've never heard of it. So, you can visually see the difference and it's being done in the exact same brightness that I'm getting criticized for.

Q. Does your laboratory maintain -- tell us about the standard of brightness that you maintain at the laboratory?

A. No microscope has like brightness one, brightness two, brightness three. It's just a little wheel that you can scroll to get the brightest versus the less. They're always on brightest. Unless we want to do something where we want to change it a little bit to get a bit of contrast, say, for the nonpolar, where we're looking at the sample that doesn't have any polarizers in it so it's basically a regular optical microscope, and sometimes -- I have one analyst who wants to reduce it just a tad so we get better contrast. But the analysts are always wanting to have the best conditions in order to photograph this stuff.

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MR. DUBIN: Just to be clear, we're not moving to amphibole yet. We're going to be addressing that --

MR. BRALY: Do you want to do that? Okay.

MR. DUBIN: Yeah.

MR. BRALY: All right.

MR. DUBIN: We're not done with chrysotile yet.

MR. BRALY: Okay. I figured you wanted to do it all at one time.

MR. DUBIN: No. I want to finish the chrysotile motion.

MR. BRALY: Very good. Okay, that's fine with me.

THE COURT: Are you finished with your section?

MR. BRALY: Yes. I'll pass the witness.

THE COURT: Thank you.

RECROSS-EXAMINATION BY MR. DUBIN:

Q. I should be able to work from over here just to make it a little easier.

So, we now heard a bit from both sides and had an opportunity to spend an evening

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sort of thinking about these issues, and let's see if we can crystallize them, and I want to address some of what you talked about with counsel during the examination.

And so, I want to start with, I think something that you would agree with, right? You can't just claim to follow an accepted methodology, you have to actually follow it and apply it reliably to the facts of the case in order to have a reliable opinion, right?

A. In some area, yes; however, if you have a crystal that has, like chrysotile, that has a little bit -- has a higher refractive indice, you have to report that. And in the refractive indices on, like the ISO method in 1.550 for the standard, the 1866b chrysotile standard does not have the same refractive indices. So, that's the area that we have to report refractive indices that we're seeing.

Q. My question is much simpler than that. You can't just say, oh, here's a methodology, PLM dispersion analysis that's in the literature, therefore, my opinions are correct unless you reliably follow and apply that methodology in your work, right?

A. With the one caveat I stated, that's

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correct.

Q. And so, I want to call up a little bit of testimony that you gave yesterday just to start. This will be slide 182.

And you were talking a little bit about Dr. McCrone, Walter McCrone and you said that Dr. McCrone and then Dr. Su, who's here in the courtroom, were probably the people who have done the most research on the type of analysis we've been discussing, PLM dispersion staining analysis, right?

A. That's a true statement.

Q. And Dr. McCrone has passed away, correct?

A. Yes, sir, he has.

Q. Meaning that Dr. Su, who's in the courtroom today, is the person on the planet who has done the most research on PLM dispersion staining analysis, the type of analysis that we're talking about today, right?

A. I would agree.

Q. And you're aware, of course, if we call up slide 183, that the person in this entire world who has done the most research on this type of analysis, PLM dispersion analysis, says that every time you are calling something chrysotile is not

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actually chrysotile, right; you're aware that he has offered that opinion, correct?
A. I would say yes, he has offered that opinion. And he has done the most research on polarized light microscopy dispersion staining, but I don't believe he's done any research on the chrysotile in cosmetic talcs.
Q. Okay. And not only has he said, based on being the most experienced person in research in this type of analysis that what you are calling chrysotile is actually talc, he has said you are not properly following PLM dispersion staining analysis methodology, correct?
A. He has stated that.
Q. And, for example, we had one example of that during your testimony yesterday, for example, you put a table up that was from one of his publications, and we can just call up slide 161 first.
And so, this is a PowerPoint actually from Dr. Su but the table inside this is what you were referring to yesterday when you were talking about what the acceptable ranges of refractive indices are for chrysotile, right?
A. Correct.

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Q. And not only has he -- let's just look at an excerpt from his report here. We could go to slide 160.
And what he says is, "I have created and published procedures for reference tables that help analysts measure RI values of the six regulated asbestos minerals, including chrysotile. MAS relies upon my procedure and tables as part of its PLM analysis of Johnson's Baby Powder. However, Dr. Longo completely misunderstood my reference table and claimed that the RI range of my chrysotile table represents the chrysotile's minimum and maximum RI values. This is not true."
And you're aware he said that, right?
A. I am aware.
Q. So, the author of the method that you claim to be following is saying that you are misinterpreting the method, right?
A. He says we're misinterpreting the method, however, if you look at some of the reference chrysotile ranges, you have ranges of chrysotile that are both in the area that we find and also in the area that is outside what Dr. Su says is appropriate. And if you take those, such as what's found in EPA, what's found in others, and if

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you take those and go on his chart, they do match the appropriate refractive indice. So, my intuition there is he has come up with a range that is not -- covers all chrysotile.
Q. Okay. But no question that you put a slide up there yesterday in your examination from his method, and he has told you you are wrong about what this table means, and you still use it, right?
A. Of course we still use it because the range of what we're finding in something like refractive indices, you know, there's a 1.567 in EPA. According to Dr. Su, that would be out of the range and you can't use his table. That 1.567 matches the refractive indices perfectly.
And there's another one, like we just looked at, is 1.538. According to Dr. Su, that would be out of the range that you would call chrysotile. So, I can't quibble with that's what he says, that's what he thinks his chart is, but it doesn't cover all the chrysotile minerals that are out of the typical range.
Q. And we're going to be talking a little bit more about your failure to verify but -- right -- the whole reason we're even having this conversation, we're looking at is this yellow,

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bright yellow, is this golden yellow, is it purple, the whole reason we're having this conversation at all is because we're talking about PLM dispersion analysis, right, which is based on color, correct?
A. That is correct.
Q. But if you had even once decided to use TEM to verify your findings, you could look at what you're calling chrysotile, you could get direct information about crystal structure and chemistry and know fairly simply is it chrysotile or is it talc, right?
A. Right.
Q. Without talking about colors at all?
A. Right, and we have done that. We have now taken samples that we have said is chrysotile in it with the same ranges we're talking about and the ranges that Dr. Su says is out of his table and have verified that it has chrysotile.
Q. No, what I'm saying is you could look at Johnson & Johnson with a TEM, take your concentration method, if you think concentration -- you could take the concentration, what you got, look at it under a TEM analysis and find what you say is chrysotile. And if you found it with TEM and you had chemistry information and crystal structure

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information, we wouldn't even be having to debate whether you are calling particles the wrong color; we would have hard data, right?

A. Well, we would have hard data but what you're saying is not very fair.

We are analyzing samples and showing chrysotile in it with the same methodology, the same everything we're doing and, actually, one of the Avon samples is a Vermont sample.

So, no, have we gotten to J&J yet? You're going to have to be patient for that. So, I look at it as we have now verified it a number of ways. We have verified it by TEM in Avon samples. We have verified it using the SG-210 as a standard because it has the exact same -- not the exact same but the same range of refractive indices and we're not the only one finding chrysotile by TEM in these cosmetic talcs, as we just saw. So that's also verified.

Q. You say you haven't got into it yet. But we looked and when you -- you started claiming there was chrysotile and Johnson & Johnson finding it back in 2020, right?

A. With PLM, that's correct.

Q. So, at minimum, even if we ignore the

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fact that you began this work overall in 2016, you've had four years, four years to look at Johnson & Johnson talc with a TEM microscope and prove that what you're calling chrysotile is chrysotile with chemistry information and crystal structure information, at least four years, right?

A. It's been four years but that's absolutely unfair. We're a commercial lab. We're not a research institute. Yes, if I -- if I was a research institute or I was a university, I could put a couple Ph.D. students on this where they would be working on it full-time. We don't get funding for that. So, it takes us a long time to go through that. And the CSM method was not in, you know -- it was not in a way from the methodology where we had to work on it. Unlike the amphibole one, where it had been published and there's a method for it, you could go right in and start finding amphiboles. The chrysotile one just had this protocol from Colorado School of Mines where they're finding chrysotile by PLM and did not do TEM on it. But we had to figure out how to make the concentration method the most, you know, efficient of extracting out the talc in the chrysotile. That was not an easy thing.

You know, we may go days because of

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workload that we're not doing any work on it, we're doing the best we can.

Q. Let's break what you just said down into two pieces.

First, you said we're not a research institution, right, we are not a research institution so why should we go and do this additional work?

A. No. No, you mis --

Q. Let me finish my question.

A. Okay. Sorry.

Q. You are currently charging $50,000 retainers every time you are retained in a cosmetic talc case, right?

A. Since May first of this year, that's correct.

Q. And how many cosmetic talc cases would you say that you're currently being retained in?

A. Four or five.

Q. Okay. Over this entire -- let's say this year?

A. Maybe six or seven.

Q. Currently, or how about last year, how many cases?

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A. Last year, I don't know. We didn't start charging this retainer to help us in the research last year.

Q. But you're not making enough money where you could afford to have somebody, instead of doing one PLM analysis, switch them over and look at a TEM analysis to verify; that's what you're saying?

A. No, I'm not saying that. It's -- we have -- we have samples that are due. Now we've hired additional people and since we have now been able to fund this, now we've started looking at it by TEM. Now, the reason we did the TEM the way we did is because another scientist by the name of Mark Bailey took three Avon -- three Avon samples, used a heavy liquid density separation method on it, CSM, but he made some tweaks on it that we're now using, and we wanted to do the first ones to verify what that scientist found. So, now we have verification from two different labs and, yes, we're going to expand in it, and, yes, we've been hiring some people now that we've got the $50,000 retainer. We got two new PLM analysts and we're looking for some additional people to help move this along, but before we got the retainers, we didn't have the money to hire people.

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Q. Let's look at the second thing that you said. You said, well, we were still developing the CSM method. You told Congress back in 2020 that you had already cracked the code on a method to concentrate for chrysotile and find chrysotile, right?
A. That's untrue.
Q. It was untrue that you cracked the code?
A. That I told Congress that. I told Congress that we didn't have a method yet for chrysotile, it was only amphiboles.
Q. We'll look at that. But your CSM method was sufficiently developed back in 2020 that you were using it for PLM, right?
A. Again, you're correct but you're being unfair. We were using it for PLM but we were finding that we were getting less in the concentration method than we were with just looking at it. We were finding that the chrysotile was ending up in the pellet, which makes absolutely no sense. So, we had to solve that riddle.
Q. But if you still had to solve the CSM problem, if the CSM method wasn't reliable enough to use for TEM, then it wouldn't have been reliable

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enough to use for PLM either?
A. That is so wrong. The PLM method was showing it was there. We were getting positive chrysotile but we weren't getting the full amount that should have been in there. That's why we had to go to -- we had to go to using the SG-210, one, to figure out why is it going into pellet. Well, it took time to do that. And you guys know in your office, you know, somebody comes in and says, you know, I need two more, you know, motions to strike and if you don't have enough people, how do you do it?
Q. So, when you were back testifying, when you started testifying about your PLM work using this CSM concentration method, did you tell juries that, "Hey, wait, I'm presenting this about my concentration chrysotile stuff by PLM but you shouldn't be paying attention to this because the method's really not worked out?" Is that what you said about your method when you were testifying about it?
A. Of course not. What I was telling the juries is that we're finding chrysotile, it was positive for chrysotile. It doesn't -- it may not be the right amount but it's absolutely positive for

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chrysotile by PLM. That's what I was telling the jury. I wasn't telling them that we still have things to do on it but before we got the TEM, I wanted it to be the message that we would publish and say this is what you do. We had to solve all these little issues. They weren't little issues, they were -- they were scratch head issues.
Q. Okay.
A. So two different things.
Q. So, let's move back -- I'm sorry. Are you done?
A. No.
Q. Okay.
A. If it is positive by PLM, that means there's chrysotile in it. And what we were -- and getting the exact amounts and getting the most efficient extraction so that we could use it so we knew in TEM that if it's there, we could detect. That was the whole issue.
Q. Let's go back and reorient about what else you've been talking. Let's just go to the orientation slide, slide 1. A lot of people couldn't see slide 1.
So, we sort of talked a little bit about these first two things already but, as I said,

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when we move from TEM which gives you just printouts of data, when we start to change to a PLM dispersion staining analysis, I think you actually said that even people who use PLM to identify minerals in practice usually don't do it this way where you have to depend on color of the particle, the birefringence; you said they usually use Michel-Levy charts, right?
A. Correct.
Q. So, you selected not just a PLM method, you selected one that would depend on whether your analyst in your lab accurately picked the right color for the analysis, right?
A. That's just like every lab.
Q. Okay. And that then, if you're an analyst and, again, that means that an analyst, and let's just -- has the ability, and I know we disagree about whether this happened, but because of the method you chose, the analyst has the ability to change the results by picking a different color than is observed under the microscope, right?
A. Any PLM analyst who wants to change the colors could do that. We don't do that. And we verified that by looking at chrysotile that was in the same size range and gave the same, same ranges

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of color. So, we validated what we were looking at and, you know, I'm not -- and I'm not blind from the, you know, the criticism of everything here because it's outside the norm.

Q. Okay. And just again, so we understand what we mean about why color is important, why color is critical to this analysis, let's go back to slide 142.

So, the way this analysis works is you're trying to eventually get to a refractive index number or two numbers actually in parallel and perpendicular. And that's when you're going to do your calculation based on those numbers to see what the birefringence value is, right?

A. Correct.

Q. And what refractive index number you have is driven by what color the analyst says they are seeing, correct?

A. Yes, sir. As we went over this yesterday, I agreed with you.

Q. So, if you see a particle that is actually yellow, it will have a different refractive index number than a particle that is purple, right?

A. That is correct. If it -- if it is that purple.

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Q. And so, for example, we went through these images, slide 51, that we were not able to see yesterday but this particle, as we discussed when I just showed you a plain image of it, you told me it was golden brown, right?

A. That's the main -- that's the main color there.

Q. And yet by reversing the process, because you actually give -- you see in the black box down there, it says "RI 1564," right?

A. I do.

Q. So, we were able to reverse the process to go from that RI to figure out what color your analyst was calling this, what color your analyst said they were seeing, and that is dark purple, right?

A. You do have that in there but as I've talked about yesterday, you don't get these really nice colors. You'll get a mixture of them and it's just over a process. So, that is one sample. But I stick to what it is. That is chrysotile and I rely on the analyst and I don't have a problem with that.

Q. And this particle that you're calling purple chrysotile is essentially the same color as all the talc plates that we see in the upper left of

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the image, right?

A. No. If you look at the ends, you know, one point, and you've got darker material there, I can see -- I'd have to be on the microscope but I can see some purple there. We have a mixture. So that's what they chose. You know, we can argue about this all day long but if you turn it -- you know, that's what we called it and I stick by it.

Q. You stick by it, but slide 143, just to understand how this matters again, the number that goes into that calculation, so, all of the number on the right, and last time I had this text in purple, but, because the number that goes into your birefringence calculation, the number that you're subtracting the number from, that is based on the analyst calling the particle purple; if it was yellow, a different number would be there, right?

A. Okay. Can we go back to the other one?

Q. Sure. 1 -- sorry, 54 -- 51, sorry. 1.564, that corresponds to purple. If it was, for example, a yellow, then you would be in the range -- in the yellow ranges. You'd have numbers like 1.579, 1.583, depending on how bright that is, and we've talking about the brightness for illumination

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ranges.

A. So, that's not yellow at all. I appreciate that's what you see.

Say, we go down to, and we take purple -- you would have something in the range of about 1.576, 1.576 and 1.561 -- that's a 5100. You are still in the range of what is accepted for chrysotile.

Q. Okay.

A. So, if I --

Q. According to you.

A. If I buy your evaluation here and that is not the yellows that you're pointing out there and I put in a .1576, I am still in the range and that is not talc.

Q. Um-hum.

A. What you have in that right-hand corner is talc. See that bright up there? Well, that we're going to be down in the 420 to 410 range. So, it's not talc.

Q. Dr. Longo, so, let's assume -- see these rounded objects. Let's on the right instead. Okay? There's one little rounded blue and there's some rounded objects up there. Those are talc plates, right?

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A. They're talc plates that also show plates under it, so, you're going to get some yellow there because you have multiple talc plates.
Q. But if you're not calling the particle that you're calling chrysotile yellow, then you're not calling the talc plates yellow and talc plates are yellow, right?
A. Wrong.
Q. Talc plates aren't yellow, okay.
A. That's a golden color, that's not yellow. You want to see yellow, you look where the talc plates are turned so the actual plates themselves are given a refractive indice. That one on the right-hand side, that's yellow and that yellow is around 410. So there we're seeing what talc is. It is not talc and it's not yellow.
Q. We'll add another aspect to this in a second because now what you're saying is it's not bright enough yellow, not bright enough yellow, it's the wrong shade of yellow is what you're saying?
A. It's not even yellow. That's goldish brown on the main, and then you have some of the purple on the outside of it. But, even if you were to use that, that's not yellow, I'm sorry.
Q. Okay. So but let's just disagree

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with the fundamental principle and then we'll talk about your browns versus your yellows in a second.
Will you agree with me that it would not be reliably applying PLM dispersion analysis methodology if you do not pick the accurate color under the microscope?
A. We've already said if you're going to make up a color, it's not following the method.
Q. So then let's add another aspect to this because this is based on your imaging, and the second thing that we talked about is the effect of the illumination on your images and whether your images are properly illuminated, and that's because illumination can also affect what your images are going to look like, right? You said that today, you said you can change the illumination, it's going to change the color, right?
A. It's not going to change the color as much as it's going to make it brighter. You're still going to be in the same refractive indice. It's going to make it brighter like that one on the right. These are the same conditions you're calling that we're not using the -- that we're not using the right brightness. But here we have one that is -- that plates are turned and we're seeing the high

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brightness yellow there that will distinguish it as fibrous talc or talc plates on edge.
Q. Well, one of the things that the gentleman over here, who is the person who has done the most research on this type of method on the planet, has said is that your images are consistently under-illuminated, right; you're aware he has said that, correct?
A. Oh, yeah I'm aware of it. You brought it up a number of times.
Q. Okay. And, for example, we looked yesterday at 171, Longo slide 171, and you have sworn under oath that your illumination on the J&J images, when you are trying to find chrysotile in talc, they are as bright as your images get, right? You said 100 percent, right?
A. These images are all -- the brightnesses are all the way up on these.
Q. One image, what we have here on the left, that is one of your first reports in which you claimed to find chrysotile in Johnson & Johnson talc, right?
A. Correct.
Q. And we see it's dark, all the yellows are golden or very dark colors, right?

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A. No, that's wrong. If you look at that image, and this was under -- it didn't have the right brightness on it -- you can see a couple things that I would say were talc. If you go down to the bottom of the left-hand corner, you have a little small fiber there that's almost white. Now, to get almost white, to get out of the spectrum, it is bright, it's as bright as you see, you know, for talc. So, and you have another one that is almost in the vertical -- the vertical direction that is a little bit over from the middle -- oh, can I get up and point?
Q. You can get up and point.
THE COURT: Yes, go ahead. Just be careful.
THE WITNESS: Thank you, Your Honor. I'll try without the cane, but I don't want to fall and see the sympathy I get or laughter.
A. So, if I don't have the brightness at the right spot, how did that happen? And if we move that over to its perpendicular, you're going to get more than -- bright blue is bright white, and how did that happen or how did that happen?
Q. Trust me, we're going to explain it, but why don't you just stay one second. We're going

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to explain how you can get those with a PLM microscopist, but I want to focus on another particle while you're up there.

Can you put your finger on the particle, the rounded particle that's on the -- the larger one that's towards the top left?

A. You mean this one here?

Q. That one there.

That's talc, right?

A. That's a talc plate, where we're seeing the plates that's causing the high yellow.

Q. And that is darker than what talc should be in 1.550 oil, right; that is darker than what you should see in a proper PLM image of talc in 1.550?

A. You're wrong about this.

Q. Okay. Well --

A. If it's darker and we're turning it down, you wouldn't get this white, which is past the spectrum and it's bright, bright, bright, bright, bright.

Q. Well, we'll be looking at images of what talc should look like in 1.550 but my point here also is that other analysis on the right, that was when you were not focused on finding chrysotile

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in Johnson & Johnson; that was an analysis of Vanderbilt talc, right?

A. Correct.

Q. And your image is much, much brighter?

A. I think it's only much brighter, not two "muches." I don't know how to categorize that.

Q. Okay. Well, what we know -- so you've got two different images. One where your lab is claiming to find chrysotile in Johnson & Johnson, one where it's looking at a different type of talc with the same analyst in the same time period and they look very different in terms of their illumination, right?

A. They look different in their illuminations. We have two separate areas, two separate samples, and it is -- you can't make a comparison, in my opinion, of two completely separate types of samples. I mean, I disagree with you on all this.

Q. One of the things that we pointed out yesterday, for example, even in your later images, even in your post Valadez images about -- we saw examples from both, but just to remind the jury --

Do you want to have a seat, Doctor,

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is that okay? I didn't want to make you uncomfortable.

A. Are you sure?

Q. I'm not under oath.

A. I know.

Q. You know, we went through some examples about this, like, for example, slide 66.

So, we talked about how, you know, these are -- first of all, this is stuff you're calling chrysotile, right?

A. Correct.

Q. Even though it has the classic colors of talc in parallel, which is yellow, and the classic color of talc in perpendicular, which is blue, right?

A. Right, and so does chrysotile. And other scientists have said the exact same thing --

Q. Wait a second.

A. -- with looking at chrysotile at SG-210.

Q. So, you're telling me that both talc and chrysotile are yellow in parallel and blue in perpendicular, that's what you're telling me?

A. No. I'm telling you that you're going to have -- that's sort of a little goldish.

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But if that was talc, that would be bright as hell. And we're seeing the exact same thing in the SG-210, and other scientists have seen the exact same thing in SG-210, which is chrysotile.

Q. And that's why we went through this illumination issue in part -- again, I'm not saying I agree with you at all about the yellow and blue one on chrysotile, but one of the reasons we went through the idea of illumination is because when you talk about how bright these yellows are or how bright the blues are that you're seeing in the images, that is impacted by illumination, correct?

A. We have agreed on that.

Q. Okay. And so that's why we've put together slide 67 that shows, you know, if you increase the illumination of these kind of images so you can actually see the background particles, the blues and the yellows will get brighter, so the illumination of your images is critical to the idea of whether these are bright blues or dark blues, bright yellows or dark yellows, right?

A. The color of brightness is critical.

Q. And despite looking at these two very different images, the RTV one and the Johnson & Johnson one from the same time period, you are just

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asking us and the court to take your word that you have illuminated these images as much as possible, right? That's based on your word, correct?
A. It's based on what our methodology is in the lab. We don't -- you know, plus 40 percent, you know, we -- our brightness wouldn't go up that and much, and I keep saying this and you're not acknowledging it, these same types of -- the SG-210 went to another scientist, who analyzed it, and I don't think he had any reason to adjust the brightness other than since he's a defense expert, and he said the SG-210 will give you blue and yellow gold.
Q. If you think you've got some scientist who's going to agree with you that this is chrysotile on PLM, bring them in. You could bring him in, right?
A. I'm not saying he's going to agree with it.
Q. Okay.
A. But what I'm saying is the yellow, the yellow blue that he's -- that we're seeing here, he verified that with the SG-210, which is chrysotile.
Q. And I want to talk about the

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calculation method again just a little bit because you put some stuff up about that in your examination, direct examination, and this is birefringence, because -- so, if we think about this as a simple sort of math equation, you have two numbers that go into the equation, RI parallel, RI perpendicular, right?
A. That is correct.
Q. And then -- so if those numbers are wrong, then the calculation is not correct, right?
A. That is correct.
Q. But you still -- what we're talking about now is just even assuming all the numbers are correct how you are doing the actual calculation in situations where you're reporting a range of RIs; that's what we're talking about now, right?
A. Correct.
Q. So, you were asked the following question, slide 180, yesterday, and you were asked: "Methodologically, is your calculation procedure for birefringence accepted and published -- I mean, published like in this EPA R-93 document?" And your response was, "It's accepted."
And that's because you had already admitted to me, and we went through this on the

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stand, that you don't know of anywhere that the technique that you're using, this averaging idea or the equivalent of high and high, has been published and put into a scientific method, right? That's slide 72. Correct?
A. When did I say that?
Q. Prudencio.
A. No. Nobody has published it. I'm not sure anybody would. But if you're going to look at a publication, and I don't know one that is more than Deer, Howie and Zussman, they do the exact same thing I'm doing.
Q. First of all, we'll talk about eventually what those things that you're claiming are because they are not calculations of birefringence for specific particles. But let's -- we'll do that later. I just want to talk about what the methods actually say because you put up EPA R-93 multiple times, and you did that again today, you were talking about EPA R-93, right?
A. Yes. This is a method that your experts rely on and here in a chart that they put out to the world this is our method, and they have a range of birefringence and if you do the calculation that we do, because that's the appropriate one, you

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get exactly in the range. If we do this high one and low one, it's out of the range. What you're suggesting is not right. It's not -- it doesn't produce reliable data.
Q. Well, you claim to be an expert on this right, on how to do a birefringence calculation; you claim to be an expert on it?
A. I don't know if I've been -- I only claim to be experts in things where the judge says I'm an expert. I've been doing this for a long time and I can see what EPA does. I can see what -- if you want to get numerical values, this is the method you use. Now, if we were to average those two together, you're going to get the exact same thing but then you would have two, a high one and the other one, and we wouldn't be having this discussion.
Q. Okay. Well, you're such an expert that if we can throw up slide 185, that's something else that you said yesterday. I asked you, Well, the method itself, EPA R-93, has a definition of birefringence. And you said, No, I don't think they have it in there. I don't think they do.
So, you didn't even know that the document and the method that you were relying on has

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a definition of it, of birefringence; you didn't even know that when you were forming your opinions or deciding how to do this analysis. Is that right?

A. I didn't see it -- I thought it was going in the definition section but it doesn't change anything. It doesn't change what EPA did to calculate the birefringence using the high gamma, high alpha, et cetera, et cetera.

Do I know everything in every document? No, you got me there. I'll give you this one.

Q. Thank you.

Will you give me that this is the definition, 'cause we looked at it yesterday, slide 78, the definition of birefringence in this document, the document that you claim that you were following is the numerical difference between the maximum and minimum refractive indices of this anisotropic substance, right, maximum and minimum, correct?

A. That's what it states, maximum and minimum, but it does not address what happens if you have a range. If you don't have a range or you just have one alpha and one gamma, there's your maximum and minimum.

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Q. If you just have one and one, then we wouldn't even need to have this conversation. This is what's happening when you have a range?

A. Right, but you understand if I take the ranges we had, all the ranges, and just averaged it out, it would come to the same thing.

Q. Well, one of the things you said yesterday about this, in slide 181, you said, well, sure, that may be the definition, but you can't just say this and not give examples of any, you have to walk through in this EPA R-93 and explain to me what am I supposed to do to get maximum and minimum, right? That's one of your critiques, like, how could that be the definition without them telling me what to do?

A. I know what the maximum and minimum is. The alpha is always the minimum. The gamma is always the maximum. It doesn't say in there anywhere if you have a range, you have to take the maximum, you have to take the highest one, and then out of your other one, you take the very lowest one. If you do that, you will not get what chrysotile is. You've got two problems here that won't give you what chrysotile is if you do that.

Q. We talked about this, slide 81. This

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is not that complicated to figure out when a method says maximum and minimum difference and there are two ranges, right? The maximum difference between -- in the refractive indices that you're observing. Let's assume I have one group, they're in parallel, they're representing one set of people. And the other group, you know, group is representing people in the opposite, in the perpendicular. Then I look at each group and I find out, okay, well, I want to get the maximum difference between what I'm observing here. So the person I'm observing in this group that's the tallest is X person and the person I'm looking at in the other group that's the smallest is Y person. That will give you the maximum difference, right?

A. You can make up -- you can put any method together you want to prove your point but, again, I'm going to go back to the basics. When EPA had the ranges, everything in there, using the method that EPA uses and the method we use, gives you exactly what's in their chart of the ranges of birefringence.

If you take your -- your people method here and take the highest for EPA and the lowest, you get a birefringence that has no

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relationship to chrysotile. So what you're asking and suggesting here is to do an analysis that can give you results that don't match the mineral.

Q. Unless you're misinterpreting that chart, because that chart that you keep putting up here doesn't actually say how to calculate things. The only place it says how to calculate things is in the definition section.

A. You're wrong.

Q. Okay.

A. Of course it doesn't say, but if you calculate it yourself, which some people will do, they'll be in the range. If you use the 80 -- 80-inch and the 60-inch person range, you're out of the range. It's -- it's clear. I can't -- well, I'm not going to sway you. You're not going to sit there and say, "Dr. Longo, you're finally right at something," so.

Q. We'll talk later about what those charts actually are. So, let's just move on because I want to talk about the next topic.

And so, the whole reason PLM dispersion staining analysis works, in other words, that you can take that and then say what the mineral it is, is because minerals have certain defined

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refractive indices, certain ways they should look under PLM dispersion analysis, right?
A. I agree.
Q. Because otherwise, if it's a situation where, well, a mineral could this way one time and another way another time even if it's the exact same mineral, then you couldn't even use the analysis because it wouldn't reliably discriminate, correct?
A. If it gives you out of the range of birefringence or out of the range of a type, but you can't look at the refractive indices, say, for the 1866b and say, "It all should be this." You can't do that because you will have chrysotile minerals now that we know that have a slightly different refractive indice.
Q. So then I want to talk a little bit then about -- and then you focused a lot on Calidria, 172.
And the first thing -- again, let's go to 173, and we talked a little bit about this, that even in Calidria, and this is an example of what Calidria looks like in 1.560 oil, and it's going to be important for us to keep track of what oil we're talking about, but in 1.560 oil, which is

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the same oil that we were talking about when you were looking at that particle you're calling purple, this is an example of what Calidria looks like, right?
A. I don't know which Calidria this is. You know, we see similar things but we look for an actual fibril that's not in this. You showed one I think --
Q. We're going to look at it.
A. But I don't know which Calidria this is.
Q. But what we're seeing is the mass of this, the mass of this is blue and purple, right? Here, almost predominantly blue everywhere, right?
A. Yes. It's blue everywhere, which puts this in about a 1.560 to 1.562, but we don't -- you just can't take a random Calidria because Union Carbide -- well, you know this -- Union Carbide made a number of different grades.
Q. All out of the exact same asbestos, right; the grades that Union Carbide sold, trust me, national counsel for Union Carbide, the grades that Union Carbide sold were the same asbestos, they may just be sold in an open fiber format, a pelletized format, things like that?

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A. Exactly. That's my whole point. It is the same chrysotile but as you mill it, you are getting different refractive indices as -- I guess as it gets smaller and smaller. It's this exact same point I've been making.
Q. Do you know which Calidria was the most milled?
A. I don't know which is the most milled because Union Carbide, I've never seen all the information but the smallest one I have seen so far is the SG-210.
Q. Um-hum.
Okay. Well, anyway, one -- the point of putting this up, the reason I'm putting this up is because you showed a bunch of slides of things in Calidria but one thing we know, we see this from the bright spots, that even in Calidria, there're going to be mineral impurities that are not chrysotile, right?
A. I know there's one or two. You may have brucite and there's something else.
Q. And so, you need to make sure that when you're presenting an image of what chrysotile in Calidria looks like, that you're actually looking at the chrysotile and not one of these stray mineral

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impurities, right?
A. We're not. These stray mineral impurities -- I only see one that might be a little fibrous, and that's at the top left-hand corner, and it's in the elongation mode. But that does not have the refractive indices that we would see.
Q. We're going to come back to this.
A. Okay.
Q. Because I want to take a step back before we get to 1.560, just talk a little bit about 1.550 because you focused a lot on those images. But I think you can agree, when we change topics and we get to 1.560, you said that's the most reliable, right, that's what you said yesterday?
A. It gives us the most precise. Really, it follows what Dr. Su said in his published paper. It's more precise. It's what you should be using for litigation, et cetera, and he's pointing to the types of refractive indices that we're seeing. That's why he said you want to use 1.560.
Q. But I just want to make one more point about making sure you're looking at the actual chrysotile, and then I want to talk about the literature stuff that you put on the board yesterday for 1.550, and then I'm going to focus on 1.560

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because I think we agree that's the easiest way to tell the difference.

So, first I want to make sure we understand that a number of slides that you are presenting, for example, the images from what's 156, a number of the images that you are presenting like this saying that that is Calidria chrysotile in Johnson & Johnson, you're not taking pictures of everything in the sample; you are selecting specific things to take pictures of for your images, right?

A. No. You wouldn't be taking images of everything in the sample. You'd have almost 100 of them.

Q. You're looking around a sample and you're picking something that you're choosing to focus on for purposes of taking that picture and putting it in your reports, right?

A. Well, we're looking for representative structures to put in the report.

Q. For example, in this image where you were talking about this being yellow chrysotile in Johnson & Johnson, this was an image where -- not in Johnson & Johnson. Let me rephrase that.

In this image where you were talking about this as an example of Calidria, this was

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something where you put 0.05 percent Calidria in talc, right?

A. Yes, sir.

Q. So, you have to know when you're using that as an example if that's actually the chrysotile or the talc, right?

A. Correct.

Q. And just so we know, 157, this is another one where you're trying to say that's purple, right? You're calling that purple?

A. Do you have -- this one doesn't look quite like -- I can't tell on it because it's kind of out of focus.

Q. This is the best image we have.

A. If you go around the very outside, and this is what we've been doing since Dr. Li, Bo Li was in our facility, you do get that purple color. We're looking at the very edge of it. You know, I don't think that's a very good copy of what we have. It's hard to reproduce these things.

Q. And I want to talk again about the literature sources about what Calidria chrysotile should look like in 1.550, what it should really look like. And one of the things that you emphasized yesterday is that there are literature

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sources that show that different types of chrysotile can have different refractive indices; in other words -- and, therefore, they will produce colors in certain arrangements, right, you mentioned that yesterday, correct?

A. That was McCrone from the different mines.

Q. Correct. And so you showed this, 159, and, for example, here, McCrone 1974 gives ranges for what Calidria chrysotile should look like, right?

A. What it should look like coming out of the mine, not before it's milled.

Q. Okay. So, but you're saying it's before -- coming out of the mine before it's milled, okay.

First of all, do you even know that that is true, that somehow Walter McCrone, instead of getting asbestos from these mines from a commercial source after somebody else, the company had taken it out and milled it, you're saying he, himself, went in with a little mining hat and went into the deposit and got it himself to skip whatever process there is that the company would have done, is that what you're saying?

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A. I don't think I said that Dr. McCrone was wearing a little helmet and went into these mines but, you know, you want to tell me any group out there, any distributor out there is selling Rhodesia, selling Venezuela, it's -- no, these came from mine samples.

Q. Well, there were a lot of companies selling chrysotile from Coalinga. There was Union Carbide, there was Atlas, there was the Coalinga, there was Pacific -- there were a lot of other companies, right, a lot of companies where you could just buy it instead of, you know, going down to a mine himself?

A. Okay, so we have -- we're looking at -- is this the Coalinga you have up here?

Q. Correct.

A. So, I don't see the magenta.

Q. Right.

So, one of the things he's saying is that the range -- the range he's giving, to the extent you're relying on this paper, the range he's giving is that Calidria should be looking just, you know, in these blue ranges, right; that's consistent with what we see in the Calidria samples?

A. It's not -- no. This is out of the

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mine. This was put up there to go that there is different refractive indices for different sources.
Q. And --
A. Excuse me. Chrysotile always had to be magenta in the parallel direction, this is not magenta, but it is chrysotile. So, this would be outside of what you typically see, that you're saying that chrysotile, they keep showing that magenta one, here it's -- here it's in a dark blue one.
Q. You're the one relying on this paper to say, "Hey, look, there's a big range here, so it's okay that I call things that are yellow Calidria chrysotile," but the reference doesn't even include those values for it, right?
A. Wrong. I don't think I said that. I think I said there is chrysotile in different environments that in different mines will have different refractive indices. It's not all 1866b refractive indices, and these all came from mines when they have not been milled yet.
Q. How do you know that?
A. I believe it's in the paper, but I do know that.
Q. Okay. Well, but you've looked at

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Calidria that was milled, was processed before you ever came into court claiming that what you're finding in Johnson & Johnson is essentially equivalent to Calidria chrysotile, your own lab looked at it, right?
A. What are you talking about?
Q. The visbestos.
A. The visbestos, the gamma is 1.560. We see that all the time. That's the range we find and that's not -- our lab has also found it's even higher. So, 1.560 puts you, starts getting you towards, you know, the higher levels in the oranges, et cetera, if I remember correctly.
Q. Well, let's see if you remember correctly.
We did this already, slide 162. This is your analysis, your lab's analysis of Calidria chrysotile, contained in a product that Union Carbide sold called visbestos, and that came out in bags after it's been processed. And the values that you gave in your own lab for what it should look like were the values that I circled here in parallel, right, in other words, 1.5 -- I think that's 66, I can't see it actually --
A. Well, I'll help you out.

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Q. 1.560.
A. You should have stayed with 1.566. No, it's 1.560.
Q. Okay, 560, okay. And so you're saying, you're reporting that chrysotile, Calidria chrysotile, before you got involved with this Johnson & Johnson stuff, that it should be that magenta-y color in parallel, not yellow, right?
A. That's where you're in the orangish yellow range. And 1.560 is what we have seen many times with the Calidria in the chrysotile.
Q. That's what you're calling the yellows, right? So --
A. No. That's more of -- would be more of an orangish reddish color. So, you're wrong on this.
Q. But you see now why it's so important, and, again, I know you disagree, but you see now why it's so important if you're seeing a yellow particle but you're calling it purple or magenta, you are essentially putting it, putting it in that target in the range of what you found before for Calidria, but if it's not that color, then it's outside of what you reported, right?
A. It's not outside what's reported.

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And we have plenty of just Calidria examples that have higher -- higher -- lower wavelengths and higher refractive indices. If you look at the ones that was put in bentonite clay, you get that range and this 1.560 is the bottom of the range.
Q. You mean your super, super, super bright bentonite clay image?
A. My super, super, super bright, you mean with the brightness all the way up?
Q. For that one, when you're not trying to claim there's chrysotile in Johnson & Johnson.
And so let's now move to 1.5 --
MR. DUBIN: I'm sorry, should we take a break now?
THE COURT: Yeah.
And I could also deal without the sarcasm in this courtroom.
MR. DUBIN: I'm sorry. I apologize, Your Honor.
THE WITNESS: I'm doing it, too, Your Honor.
THE COURT: Yes, you both are.
THE WITNESS: I apologize.
THE COURT: It's really taking away from the importance of this hearing. I don't know

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how you get away with it during trials but it's inappropriate.
We're going to take the break now. See everyone at 20 of.
THE WITNESS: Thank you, Your Honor.
THE COURT: Off the record.
(Recess: 10:25 a.m. to 10:43 a.m., Eastern Standard Time.)
MR. DUBIN: Are we ready to begin? Is the projector working?
VOICE: Yes.
BY MR. DUBIN:
Q. Hi, Dr. Longo. How are you?
A. I'm doing fine, sir. How are you?
Q. So, I want to now talk a little bit about 1.560, both why it helps us understand this issue about and helps us avoid, to some extent, this characterization of yellow and why you made the switch. And then I want to look at some of your Calidria images in 1.560, 'cause I think most of the images that you showed, at least of Calidria alone, what you said was, just looking at Calidria yesterday, were 1.550, though, you showed images with Calidria mixed with things in that oil.
So, first, let's just look at your

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testimony yesterday, and I think you agreed with this, though I don't know if I wrote two numbers, is it 178 or 163 -- 178. And so you were talking about the fact that you get a more precise analysis, and it can be more reliable to look at these particles in 1.560 and that was based on a suggestion by Dr. Su and some others that you change your refractive index oil, right?
A. Yes.
Q. And I just want to make sure we understand, first of all, again, what that should do if you're looking at chrysotile and then what it did do in your images, but one thing -- let's talk about first one of the reasons why that suggestion was made, and I think that's from 163. Is that the yellow? 186, okay.
So one of the things that Dr. Su had written in one of his papers is that experience tells us that yellow is the hardest CSDS, that's central stop dispersion staining, color to be quantified and should be avoided at all costs. In other words, he was saying that you should avoid trying to characterize minerals based on debating, such as we have been doing, over whether something is bright yellow, pale yellow, golden yellow and

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whatnot, because one of the things that can influence that is the color temperature of light, right?
A. Well, it's right that it states that. I think we discussed that yesterday where he specifically had that in the amphibole section.
Q. And we also discussed the fact that before you -- most of the images that we've been looking at before you switch were taken using a Tungsten lightbulb, right? We talked about that yesterday, that when you were back in the original and back in your 1.55 area, a lot of the images you were taking were with a Tungsten lightbulb that has a particular hue or color temperature, right?
A. Correct.
Q. And so that is -- when we get to your Valadez images, when we're talking about the Valadez images and after, where you're now using 1.560 oil and we don't have the Tungsten lightbulb anymore, we have LED, correct?
A. Correct.
Q. So, we've at least controlled for part of the equation. And I want to make sure I understand, we understand what the raising, and I know we talked about this yesterday, but what the

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raising of the refractive index should do to help you resolve this issue about yellow and orange and the like.
And so just for an example, I'll just go back to 163 for a second, the Calidria one, so we can look at the color bar. And so, let's assume you're right, and that Calidria chrysotile can sometimes have a refractive index in parallel, let's assume in 1.550 oil and it's in that golden-y yellow number that we see there, right? Let's say, for example, a 1.566, right?
Let's assume that for a second. Okay?
A. Okay.
Q. So, what he's suggesting is that by raising your refractive index, the color that would be demonstrated by that particle would now move farther to the right, correct?
A. Correct.
Q. So, in other words, you could pull those colors, if what you were originally looking at, was really that golden and not -- and that wasn't an artifact of your image, now those particles would start to move and present the colors that are further to the right on the range, right?

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A. Correct.
Q. Okay. And so one of the things that we showed, just from a very overview perspective, and that was slide 44, is that when we look at your old images, which are on the left, and we compare them to your new images of what you're calling chrysotile on the right, instead of becoming magenta or blue in parallel, the particles are actually more yellow even than when you were using 1.550, right?
A. Are we looking at the same thing?
Q. We are.
A. That's not more yellow.
Q. You don't think that the particle on the right is more yellow or brighter yellow than all of those particles -- the particle you're calling chrysotile on the left, that golden one?
A. No, it's -- it's more of a, I would call it a goldish brown. That's not -- I don't see yellow there on the particle we're looking at. I see some -- little bits of yellow here and there, but not on the particle we're looking at compared to the other one.
Q. Suffice it to say, when you move, when you changed from using 1.550 to 1.560, instead of the particles presenting -- that you were calling

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chrysotile, instead of them presenting as magenta or purple, they are the color that we see, whatever people say it is, on the right?
A. Correct.
Q. So, one of the things we also looked at was your images of what you call Calidria 'cause you've done some samples where you have looked at Calidria on its own in 1.560 oil, right?
A. I believe so.
Q. And we looked at a little bit of this but I want to make sure we understand it in context. So, slide 92 is one of your images. Is this lights on or lights off? Off.
And so, one of the things that we pointed out, that this is the reference that you're using for Calidria chrysotile in 1.560, right?
A. Yes.
Q. And one of the things that we pointed out here, and we discussed this a little earlier, is that you need to make sure that when you are looking in the Calidria for a reference, you need to make sure that you're actually looking at the Calidria and not some impurity, right?
A. Correct.
Q. And so this is not the entire field

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of what was available for you to photograph, it's something that you selected to take a photograph to claim was representative of the Calidria in the sample, right?
A. Right. When I say it's representative, it's in this 1.560 to 1.569 range.
Q. And one of the things that we looked at again, and we've talked about the illumination on your images, but we compared your image of Calidria chrysotile in 1.560 to Dr. Sanchez's image, and that was 93.
And when we're trying to figure out first whether what you have selected as your reference is actually the Calidria, it's at least important to understand what the bulk of the material there looks like in PLM, right? You want to make sure you understand, because if it's an impurity, it's probably a smaller amount there, you want to know what does the sample in general look like, right?
A. Well, yes and no. I mean, you have what Sanchez has, but on our side, what we were looking for were the fibrous components and you have a lot of small little fibers there, but that's beyond the resolution of the microscope. So, our

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field of view is higher. That's why ours is darker because we're not focusing down on all those particulates, all the blue stuff.
Q. And the blue stuff, that's Calidria, right? That's what we saw before, the blue stuff, that's classic, classic, what Calidria should be looking like, right?
A. No. We don't see that. You've got one here. What we're looking for is the actual chrysotile structures in there.
Q. Okay. And one of the first things we've pointed out about your image is that the way you have illuminated this image that you presented as your example of Calidria, the illumination obscures the fact that there's all this blue stuff in the back that you're not focusing on for your Calidria reference, and this is your image illuminated against Dr. Sanchez's image. And so why was it so dark that the viewer wouldn't know, wouldn't see that you are picking something that is not representative of the sample as a whole? Why?
A. You're wrong on that. We have it at a different plane and, again, if you want to look at something that's bright which would only happen if you have the brightness full up, is that particle up

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there that is white. That's at about a 20 degree angle, that's a little different than this. So we're looking for the actual fibrous structures, not all the particulate we have here that's blue.

Q. You said you're looking for the actual fibrous substance. Calidria is chrysotile, right?

A. Right.

Q. All chrysotile is fibrous, correct?

A. I guess you and I -- if you look at the image, what you're seeing is a lot of small particulate. You do see some fibrous material. A lot of them are in the gamma direction -- excuse me, the alpha direction, but you can't analyze them, they're too small. So, we're looking for what we can see and actually analyzing the refractive indices over it.

Q. I'm sorry, but you don't need to hunt around in Calidria to find a fibrous Calidria; Calidria chrysotile is fibrous, all of it, by definition, right?

A. If you actually have the fibrous portion, what we're showing here is these very small particulates, and there's a lot of fibers in there but they're too small to analyze.

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Q. What is non-fibrous chrysotile?

A. Well --

Q. Does it exist?

A. -- non-fibrous chrysotile could be lizardite, could be antigorite, one of the serpentines, but that's the wrong colors for that.

Q. So, in other words, all the blue stuff that is fibrous, you just chose not to focus on it when producing your reference image for Calidria in 1.560, right?

A. No. You are taking this out of context. We have fibers in there that we cannot identify by refractive indices because of the size restriction on the polarized light microscope.

Q. These were bags of asbestos, right; SG-210 was a bag of asbestos?

A. I'm not debating you on that. You're right.

Q. Wouldn't it be natural to assume that the stuff that there is the most of in that bag of asbestos is the asbestos itself?

A. I don't know if this is the most of. But if that is -- if everything we see there is asbestos, then you have a lot of asbestos that would be less than -- less than a micron in length.

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You've got a lot of particulates here, but it's out of the range of what we can identify.

Q. And even if we assume, let's even assume that you picked something that's Calidria, you didn't pick something that happens to be one of the minor impurities in that bag, it still doesn't look like what you're claiming is chrysotile in the Johnson & Johnson talc, right?

A. Well, in that one example it's different, and I think, as I've tried to explain, the -- the -- even chrysotile, the chrysotile from Union Carbide, they're in a range of refractive indices. They're not all the same. You're going to have down to 1.560. We've even seen 1.559. And we've seen 1.570. So, you're never going to get the exact same colors every time.

Q. So, you do --

MR. BRALY: Your Honor, at this point I've got to raise an objection. Basically all we're doing right now is cross-examination. We're not really discussing methodology or how -- it's just difference of opinions. So, I would -- my objection is that we're not focused on what this hearing is actually supposed to be about. Now he's just doing cross-examination.

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MR. DUBIN: Your Honor, this is, again, about whether he's reliably applied his methodology to the facts of the case. That's a classic --

THE COURT: I agree. Continue, but I think you've covered this area.

MR. DUBIN: Right, and I only have about one or two more slides on this, and then I'm going to cover my last topic.

THE COURT: I just mean with this particular figure --

MR. DUBIN: Okay. I understand.

THE COURT: I think we've now covered that.

MR. DUBIN: I'll move on.

BY MR. DUBIN:

Q. But, did any of your, what you call chrysotile in 1.560 in Johnson & Johnson, this major shade of blue that we're seeing right there in parallel, do you have any of them that are that color?

A. This shade of blue?

Q. Yeah, that color, the major color that we're seeing there, are any of them that color?

A. Yes.

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Q. Maybe you'll show us, because we went through all of the Valadez particles, right?
A. Well, the Valadez particles, we've done others since then and we've done others where the same mines, and if you get a certain range, you will have it in blue.
Q. I'm curious to see that, but slide 95 also because I said even if you zoom in, this is the unilluminated version, the next one, 96, is the illuminated version, I guess we can go back to the other ones just as easy, this is bright, 95, and you can see that even this particle that you've picked out of your Calidria reference in 1.560, it is not the same color, it is not the same refractive index as what you're calling chrysotile, Calidria-type chrysotile in Johnson & Johnson, right? Those are not the same color?
A. We only looked at a couple examples. You're going to have a range of colors.
Q. Next short topic.
Now, one of the things you referenced is the idea that other people have claimed to find chrysotile in Johnson & Johnson including AMA, right?
A. Yes.

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Q. And if we looked out there, there are also studies of people who said there isn't chrysotile in Johnson & Johnson, right?
A. I agree.
Q. For example, there was a study conducted by NIOSH of Johnson & Johnson Vermont mines where you say basically every bottle has chrysotile, and they looked at that talc with TEM, with PLM, and the like, and they said there was no asbestos, no chrysotile, no asbestos period, right?
A. That's correct.
Q. And if any of the scientists involved with that or any of the other stuff that you cited were here, we could talk to them about their methodology but we're here to talk about yours, so I want to focus on that.
And are you aware of anyone in the world who has either testified or published that you can find chrysotile in essentially every single bottle of talc, irrespective of mine source in the United States, by PLM; anybody who's published that, anybody who's offered that opinion, that in essentially every bottle, you can find chrysotile by PLM; anyone in the world who said that besides you?
A. If they have, I haven't seen it.

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Q. And so that's what we're here to talk about. And so, talk a little bit about the issue of verification. Okay? And whether things have been tested.
And so, as I understood it, one of the things that you said is that if you actually find chrysotile by PLM, then you don't need to do it by TEM, right? That was what you said, right?
A. What I said was, it's not required by any agency. There's no requirement for it, but we are starting to do it and we are finding it.
Q. Well, again, focus on what the evidence actually is in this case and about Johnson & Johnson, and your testing.
But you know, maybe you don't know, but one question that may be relevant to the court is whether your theory, not just has to be tested but whether it can be or at any time has been tested. So, I want to focus on that issue and the choices that you have made.
And so, if it we pull up, for example, slide 97, you are aware that for years, a variety of people have been saying that you are misidentifying talc from chrysotile ranging from witnesses like Dr. Sanchez, who's a defense expert,

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to Mr. Poye, who has appeared on the side for plaintiffs in Johnson & Johnson cases, to the man that you said is the person on the planet today has done the most research on PLM dispersion analysis, all of them have said that they think that your identification is wrong, correct?
A. They have.
Q. And so you could, you could have for years tested that proving you were right or wrong by doing TEM analysis to identify the minerals that you are looking at, right? That is something that you could have tried at least, right?
A. No. We've already discussed this and I've already discussed the reason why that I wanted to make sure we had -- the method was worked out enough that we would have enough sensitivity by TEM. Now, we have done TEM. It has been validated by another independent lab, and we came up with the same results. This just happened in the last couple weeks. Maybe the next time you see me I can show you the stuff in Johnson & Johnson.
Q. Exactly.
And so you're telling me that whoever's doing this is going to come in and agree with you that there's chrysotile in every bottle of

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talc sold in the United States irrespective of mine source; they're going to agree with that opinion based on whatever additional work they've done. Are they going to say yes to that?

A. You would have to ask them. I don't think when we found this method, I'm not sure we're going to find chrysotile each and every time by TEM because the PLM can look at much more, et cetera, but we are finding it by TEM now, and another lab out in California, Mark Bailey, and we also validated it because I got the exact same results that he got. So, now we have the method worked out, so we're going to be doing it routinely.

Q. Okay. Well, I look forward to seeing it. But we talked about this, and one of the things you said is, well, I didn't do it by TEM because I didn't have the method down. And remember I asked you a question earlier, I said, didn't you tell Congress -- didn't you tell -- sorry, you know what, it was the FDA. Maybe I asked the question the wrong when I said "Congress," so let me ask you this way: Did you tell the FDA in 2020 that you had, quote, "cracked the code" on how to detect chrysotile in cosmetic talcum powder products? Did you tell the FDA, not Congress, did you tell the FDA

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that?

A. No, I did tell them that.

Q. So, you did tell them that.

So, you had a method in 2020 that you felt confident enough about, the chrysotile separation method, in 2020, that you told the FDA that you had cracked the code, and yet you still for now four years have not tried once to use the method that you had always said was the best method for determining if there's chrysotile in talc, you didn't try once to use it to verify your results even in the face of all the criticism you received. Is that true?

A. Mr. Dubin, that is so unfair. We had cracked the code because there was -- people were saying out there that it's impossible to separate out the two. We always were finding positive at that point by polarized light microscopy, and so -- but the actual getting it where you're -- you're getting and harvesting out as much chrysotile as possible took years to figure out, based on manpower, et cetera. But we've always been able to find it by PLM, just not the appropriate percentage of what's in there.

Q. Okay. You said you cracked the code,

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four years later we're here debating about whether something is bright yellow, golden yellow, purple, because you don't have any TEM data to prove what you're finding. Isn't that right?

A. Well, I brought the TEM data with me if you want to see it and it is at a Vermont mine. So, if you want to take the label off Avon and stick on Johnson & Johnson, it's the same mine, and I have that data if you want to look at it.

Q. And you're aware that Dr. Bailey has been saying to us, when we've been trying to ask him about any of this stuff, that it's cloaked under some confidential privilege. And so then you bring it in and you want to try to get me to cross-examine you on something that I've never seen, right? That's what you're trying to do?

A. I'm not trying to do anything. I don't know what you know or not know.

Q. Okay.

A. I know Mr. Bailey has been testifying about it in various courtrooms. So, I don't think it was a secret.

Q. Anyway, another thing that you could have done over the course of this four years, since you claim to have cracked the code, that would allow

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people to evaluate in the scientific community what you have said and what you claim to conclude is published, right? Publication is another method to help test the reliability of your methodology and your results, right?

A. I agree.

Q. And you claim at this point to find chrysotile in essentially every bottle of talc that came from any mine source, no matter what geological formation in the United States, right?

A. Every mine source after we knew what we were looking for, we were finding it repeatedly, just like every time we analyzed anything by TEM out of a mine, we find these other accessory minerals every time, find mica, find aluminum silicates. It's not like tremolite where you have to have this additional -- this additional calcite material in the mix, so you don't find that as much, but all these talc mines have basic ingredients of chrysotile. And it's, like, don't shoot the messenger. I'm just telling you we're seeing it every time.

Q. And you're not a medical doctor but you agree, I think we can all agree, that asbestos in talc would be a potential health concern, right?

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A. Yes, sir, I would agree with that.
Q. And so, you would think that if you discovered this method, this solid reliable method, that allowed people to know, to test and to find out that there was chrysotile in basically every bottle of talc on the shelves that was coming from a US talc source, you would think that you would want to make sure that people knew about it in the literature, had an opportunity to learn the method themselves, and had an opportunity to do that kind of work themselves to protect the public, right?
A. Right, but Johnson & Johnson and others beat me to it. I had just gotten the rest of my exemplars from the rest of the world from the four mines that you have, the only two I was missing was from India, and starting through the analysis and in my plan was is to give those two health officials, et cetera. I mean, when you withdrew -- when you took it off the market in the United States and took it off the market in North America, you can't -- you know, you can't find a talc sample on a grocery store anywhere now in the United States and everybody's taken it off the market.
Q. Do you know how many talc-based or containing products, for example, makeups and things

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like that are on the market today? Do you know how many?
A. Not that many.
Q. Okay.
A. If you're dealing with makeup that gets pressed on, you know, I don't have an opinion you get any exposure there. If you're dealing with a bottle of baby powder and you're sprinkling it on an infant or you're sprinkling it on your body or anywhere like that, yeah, that's an issue, but putting on makeup, it's hard for me to, especially the packed ones, but I looked the other day, I couldn't find any.
Q. So, if this judge is seeing cases in the future about things like pressed products or ones that aren't really loose powders, those cases are junk according to you, right? We shouldn't be concerned whether there's asbestos in there?
MR. BRALY: Objection, Your Honor. Are we seriously going to have an answer to this question?
THE COURT: Don't answer that question.
MR. DUBIN: Okay.
THE COURT: It's a motion for another

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day.
MR. DUBIN: Okay.
BY MR. DUBIN:
Q. Well, all I'm saying is that when I asked you in February of 2021 why you hadn't published, if you had this great method, you said there was no good reason other than getting around to it, right?
A. That's correct.
Q. And we're here today, June of 2024, and you still have not published any paper relating to what you believe is the proper identification of chrysotile in cosmetic talc. Is that true?
A. That's correct. That's still true.
Q. Still true. Okay.
MR. DUBIN: And with that, that's the end of my chrysotile section.
THE COURT: Thank you.
THE WITNESS: Thank you, Mr. Dubin.
MR. DUBIN: Thank you.
REDIRECT EXAMINATION BY MR. BRALY:
Q. Dr. Longo, I have a couple things that I want to talk to you about.
The -- you were shown questions from Dr. Su and said that Dr. Su is, quote/unquote, the

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method that you were following, that's how the questions were couched.
Do you recall that?
A. Yes, sir. It was the reason we switched over to 1.560.
Q. Right.
That's why you made that change?
A. Correct.
Q. The PLM analysis is done through the ISO method?
A. Yeah, the PLM analysis is very straightforward. We've been doing that, not a lot of researchers have been doing it, is focusing in on chrysotile and amphiboles in cosmetic talc. So, we're using the methodology that everybody uses.
Q. Right.
A. You can debate if it's the right refractive indices or not or what color it is or not, but the methodology that we're using has been well established. Then you come down to what color is it.
Q. Is it well established in the published literature including in tables published by Dr. Su that chrysotile has multiple ranges of refractive index values?

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A. Yes. When I was talking about Dr. Su's chart where it is said I was out of the range and I was misusing them, there is a range in the -- in the EPA for reference chrysotile that was 1.567. 1.567 would be in the ranges that I've been told I'm misusing the chart. They have another one in there for --

THE COURT: I'm sorry, did you say misusing the chart or using the chart?

THE WITNESS: That I'm using the chart but I'm misusing the information out of it, because it wasn't designed to go the full range of chrysotile, it's mathematical.

But the areas that I'm saying I'm misusing in the 1.560 to 1.569, there's a reference out of a chrysotile in the EPA that's 1.567. According to Dr. Su, that would be misusing his chart.

Q. I want to show you one slide here real quick.

So, the photograph on the left is the slide that you were shown by Mr. Dubin, and you see the color bar at the bottom has the colors associated with different wavelengths?

MR. DUBIN: I'm sorry. Objection.

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That's the wrong thing. It's 1.551 verse --

MR. BRALY: It's your picture.

MR. DUBIN: No, no, the thing you're matching it with, it doesn't apply.

MR. BRALY: I know.

MR. DUBIN: Okay.

BY MR. BRALY:

Q. So, the table on the left is the photo from Mr. Dubin that's got the wavelengths on the bottom, right?

A. Correct.

Q. And wavelengths and the color associated with wavelengths, those are just what they are, wavelengths, and the colors line up, but those dotted lines that seem to indicate the range of where chrysotile should fall, those dotted lines come from the ISO table, correct?

A. The ISO 1.550 table.

Q. Right.

And so, that's the table from Exhibit 3 that's shown on the right, which is the ISO central stop dispersion staining color for chrysotile in 1.550 fluid?

A. Correct.

Q. Right?

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A. You'll have different colors in 1.560. You're going to have the same refractive indices, but where the colors hit are going to be different.

Q. Right.

And so when he shows you this chart for 1.560 fluid that retains these vertical dotted lines indicating that that's the range where chrysotile should come in from, that's taken from a different chart using different refractive index oil, isn't it?

A. It is. I didn't catch that.

Q. The comparisons that you made in PLM were made against a known quantity of chrysotile, correct?

A. Correct.

Q. The ranges of birefringence, again you were asked about this, this calculation method, if you have a singular value for gamma and for alpha, then you have maximums and minimums, correct?

A. Correct, that's -- when they say take the minimum and you take the maximum, that's what they're talking about. They're talking about the two refractive indices, one's much lower than the other, and that's -- that in my mind is what they're

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trying to say there.

Q. And, for example, I showed you this slide in the examination that we just did, but this is just a listing of the different birefringence calculations that you did in various reports that we looked at, right?

A. Correct.

Q. But like the one in the box, so the M71643 report, for your birefringence calculation there, a bunch of those had no averages of any kind, correct?

A. Correct. That's why you see that it falls right in line, where we took the two and averaged them.

Q. Right.

A. If we hadn't averaged them, we would have gotten the exact same.

Q. Right.

So, this calculation method that is being urged upon you with -- methodologically misclassified, what you were finding is something with a birefringence much, much, potentially much higher than what is actually being observed?

A. Correct. If you -- that's the whole thing, if you spread the distance out, you're going

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to get a much higher one. If you want to look what's in the range of what chrysotile is, it's going to be this. If you do the same thing with talc, if you change how you're doing it, instead of 1.50, 1.60, you're going to be 1.70 or 1.80. So, you're getting into something that's different.

Q. I understand the discussion with Mr. Dubin relative to you could have or you should have or you possibly might have been able to do TEM analysis but methodologically do you have to?

A. No. It's not required in any method that you have to verify anything you find, any asbestos you find positive, by PLM. It's not a requirement, it's not -- it's not required in order to say you have asbestos.

Q. Have you found chrysotile by TEM in talc samples?

A. I have.

Q. Has Johnson & Johnson found chrysotile in Johnson & Johnson's Baby Powder?

A. Yes.

Q. We looked at over 35 different examples outside of your lab that reported chrysotile in Vermont and Chinese sourced baby powder.

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A. I know. It's nothing I'm saying that's not already been known by Johnson & Johnson.

MR. BRALY: I think I'm good here. So, I can either move on or...

MR. DUBIN: Just 10 seconds. I want to make sure that the slide issue he raised is clarified for the record, if that's okay.

THE COURT: Fine. And then you'll have -- I just have one question.

MR. BRALY: Yes.

THE COURT: You just indicated that there's one EPA range for chrysotile that you used that Dr. Su said is not chrysotile, is outside of the range.

THE WITNESS: Well --

THE COURT: Did I get that correct?

THE WITNESS: -- he didn't really say it was outside the range. What he said was I'm misusing the charts, that that's not -- was designed for getting in those areas, that should be used for that, because it was just a mathematical calculation. So, I was just giving examples of, like, the EPA 1.567 is in that range where Dr. Su is misusing it. And they also have one there that is 1.538 for the gamma -- excuse me -- for the alpha

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that was in the range he said where I was misusing it.

THE COURT: And the EPA ranges, are they found within R-93?

THE WITNESS: Yes, that chart which also gives the birefringence.

THE COURT: Okay. Thank you.

You had a follow-up.

MR. DUBIN: Just one small thing just to clarify, Your Honor.

THE COURT: Sure.

FURTHER RECROSS-EXAMINATION BY MR. DUBIN:

Q. I just want to make sure because there was some implication that we were taking data from different things that didn't have the right oil. So, if we could just pull up slide 51 to make sure we understand that.

So the color bar on the bottom, right, that has the ranges indicated, that is taken from ISO, right?

A. Yes.

Q. And ISO doesn't have a comparable color bar for 1.560, right?

A. Correct.

Q. Okay. And we went through all of

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this before. The reason why we took the ISO color bar is because we didn't want any dispute about what color corresponds to certain nanometers of light, right?

A. Well, I didn't know what your reasoning was.

Q. Okay. Not for the black dotted line or the white dotted line, just so we know what color matches with what nanometer of light, right? And that's accurate because that's just light, right?

A. That's accurate. What would be different is -- you know, 560 is never going to change. Where it lands on the refractive indices changes because it's changing the color.

Q. So, for the refractive indices numbers, the ones above that, we went through that and what we did is we backed out from the Su tables at your temperature of lab 1.560 so that we could have the right refractive index numbers up there that correspond to the correct wavelength of light so that we could have this discussion with you that I did in Eagles and to some extent in Lanzo, right?

A. I guess so.

Q. And so we go to slide 51. I just want to make sure there's not a dispute that you

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have agreed that the wavelength of light corresponding to the refractive index on this slide and what you have classified the particle as is the purple that I've circled, right?

A. Well, now that you're using the other chart, in order for me to say that, I would really need to sit down with a 1.565 and go through it all.

Q. Okay. So, you're saying you'd need to do another analysis in another oil to figure this out now?

A. No. I would like to just go, okay, where does 1. -- in this oil, what it is, just to verify it. That's all.

Q. We already went through your testimony, you already admitted to this in your last thing, but I asked you flat out, you're calling this purple about a million times and you agreed with that, right?

A. I'm not sure I agreed with you a million times, but.

Q. Okay. But you agree with that, right, 'cause I have your testimony from the Eagles case?

A. Yes, and you can see purple in there mixed in with the others, so...

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Q. Okay. Thank you.

A. Thank you.

THE COURT: Mr. Braly, anything further on this follow-up?

FURTHER REDIRECT EXAMINATION BY MR. BRALY:

Q. The only point I was trying to make, the dotted lines indicate that this is a primary range to find chrysotile, and those dotted lines came from a table taken from a different medium. That was the extent of what I was trying to say. And you understood that, right?

A. Yes.

MR. BRALY: Okay, thank you.

THE COURT: Okay.

MR. BRALY: Are we going to move directly onto the --

THE COURT: It's only 11:30.

MR. BRALY: Yeah, I can. My concern is a little bit twofold. I don't know that I have a tremendous amount to cover with him, just to go through the methodology of the amphibole stuff. My concern is the stopping time today at 2:30. I think it would be patently unfair to get started on this and then --

THE COURT: Can I speak to counsel in chambers while we take a break?

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(Recess: 11:26 a.m. to 11:42 a.m., Eastern Standard Time.)

THE COURT: So, we're back on the record.

Given that the court needs to end early today and we will not be able to complete the entirety of Dr. Longo's testimony for today, we will adjourn today's proceeding, continue Dr. Longo's hearing on another day.

For those of you that have been attending, we'll be here next week on Wednesday. Is it Dr. Brody -- no, Dr. Compton. For anyone who wishes to attend, it will be a similar type setup.

So counsel, you wish to place something on the record now?

MR. BRALY: For the plaintiffs, we have an agreement to resolve the exhibits from this and come up with some kind of master list of exhibits for the plaintiffs and defense.

THE COURT: Okay.

MR. BRALY: And I think we can accomplish that.

Mr. Garde, I don't know if you have anything else.

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MR. GARDE: No. Did you put on the record --

THE COURT: No, no.

MR. BRALY: I'm going to -- I was going to send a written summation on that.

THE COURT: Okay. Any questions from counsel?

MR. DUBIN: No, Your Honor.

THE COURT: So, you'll let me know of a continued date. And for those of you that have been here, I'm going to try -- we're going to try for the completion of Dr. Longo's deposition -- excuse me -- 104 hearing, to have it by Zoom, but I can't make it available on open Zoom for everyone, just because of issues of overburdening the Zoom court. So, but we'll let you know when it is scheduled, so if you wish to order a transcript of that, you can.

All right. So, we've completed for today. Thank you, everyone, and see you next week.

(Proceedings adjourn: 11:44 a.m., Eastern Standard Time.)

CERTIFICATE OF OFFICER

I CERTIFY that the foregoing is a true and accurate transcript of the testimony and proceedings as reported stenographically by me at the time, place and on the date as hereinbefore set forth.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney or counsel of any of the parties to this action, and that I am neither a relative nor employee of such attorney or counsel, and that I am not financially interested in the action.

Andrea Nocks CCR CRR

ANDREA NOCKS, CCR, CRR
Certificate No. X100157300
Certificate No. XR00011300

New Jersey Rules Governing Civil Practice

Part IV, Rule 4:14

Depositions Upon Oral Examination

4:14-5. Submission to Witness; Changes; Signing

If the officer at the taking of the deposition is a certified shorthand reporter, the witness shall not sign the deposition. If the officer is not a certified shorthand reporter, then unless reading and signing of the deposition are waived by stipulation of the parties, the officer shall request the deponent to appear at a stated time for the purpose of reading and signing it. At that time or at such later time as the officer and witness agree upon, the deposition shall be submitted to the witness for examination and shall be read to or by the witness, and any changes in form or substance which the witness desires to make shall be entered upon the deposition by the officer with a statement of the reasons given by the witness for making them. The deposition shall then be signed by the witness. If the witness fails to appear at the time stated or if the deposition is not signed by the witness, the officer shall sign it and state on the record the fact of the witness' failure or

refusal to sign, together with the reason, if any, given therefor; and the deposition may then be used as fully as though signed, unless on a motion to suppress under R. 4:16-4(d) the court holds that the reasons given for the refusal to sign require rejection of the deposition in whole or in part.

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